PATENT SPECIFICATION

502,761

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COMPLETE SPECIFICATION

Improvements in and relating to Hand Inhalation Apparatus

I, CHRISTOPHER ENGELBRETH, of Norrebrogade 32, Copenhagen, Denmark, a Danish Subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The present invention relates to improvements in hand inhalation apparatus for volatilizing medicines by means of the heat of the hand.

A medicine is most effective when introduced directly into the blood, and in the case of volatile medicines this introduction into the blood may be brought about by volatilizing the medicine and inhaling the vapours thus produced, when the medicine will pass through the lungs to the arterial blood in the shape of free molecules. In this manner the medicine produces a different and more specific effect than when introduced to the blood through the intestines. This is for instance a well known fact in the employment of chloroform, which when inhaled has quite a different effect from when swallowed.

Some medicines are volatile at ordinary temperatures while others have to be subjected to a certain heating in order to produce by evaporation a sufficiently large dose. The temperature most appropriate for inhalation purposes is the temperature of the body, as at this temperature the evaporated medicine will maintain its vaporous form during its passage through the lungs after inhalation. To obtain this temperature in an inhalation apparatus the heat of the hand may be utilised since it is the most convenient and cheapest form of heat, and on this fact the present invention relies.

According to the invention I provide an inhalation apparatus for volatile medicine, comprising in combination a thin-walled vessel of heat-conducting material constituting a medicine chamber adapted to be held in the hand and provided with an inlet and an inhalent outlet for the respiration of air, and a medicine applied in the form of a thin layer to the inner surface of the medicine chamber so as to be capable of being volatilized in full by the heat emitted by the hand holding the apparatus.

[*Price* 1/-]

Preferably the shell and the medicine are supplied separately so that when desired, the user may apply the medicine to the interior wall of the shell.

The means for introducing the volatilized medicine into the nostrils may comprise a nozzle in the form of a mask or cap to be placed over the nostrils, or a small pear-shaped hollow body or bodies adapted to be inserted into the nostrils and to fit closely therein.

Preferably the medicine chamber is made of any suitable material and is given such a form as to facilitate its heating, when held in the hand, by means of the heat emitted by the said hand so as to cause evaporation of the medicine; and the lower end of the apparatus is provided with one or more respiration apertures.

When the apparatus is held by the hand in position for operation the volatilizing medicine may be inhaled to the lungs, while expiration takes place throughout the mouth.

Various forms of construction of inhalation apparatus according to the invention are illustrated in vertical section in Figures 1-4 of the accompanying drawing.

Referring to Fig. 1 the inhalation apparatus comprises a medicine chamber 1 formed by means of a cylindrical glass shell which at its lower end is tapered and provided with an aperture 2. Within the upper end of the chamber 1 there is inserted a stopper 3, through the centre of which is passed a glass tube 4 branching, outside the stopper, into two pear-shaped nozzles 5 so spaced apart and of such a size that they can fit into the nostrils of the patient. In use the inner surface of the medicine chamber is coated with the volatile medicine. A short distance within the upper end of the tubular glass vessel there is formed an inwardly extending projection 6 for limiting the extent of the coating of medicine within the chamber.

In Fig. 2 there is shown a modified form of construction of the inhalation apparatus, and in this the medicine chamber 7 is formed in one piece with the nozzle member 5a, and in the base of the chamber 7 there is a respiration aperture 8.

The apparatus illustrated in Fig. 3 comprises a medicine chamber 9 in the form of a test tube in the base of which there are a number of apertures 10 for the respiration air. In the upper end of the tube there is inserted a stopper 11, through which is passed a short glass tube 12 carrying on its upper end a nose cap 13 made of, for instance, rubber and formed to fit around the nostrils.

Forms of nozzle member or nose cap other than those illustrated are possible, as likewise the medicine chamber may vary in form, but in all essentials the subject matter of the invention is that the medicine is so disposed as a coating on the wall of the medicine chamber that it may be volatilized by means of the heat of the hand holding the apparatus, and is thereupon mixed with the respiration air.

In practice, the invention may be used either by measuring out predetermined doses of the medicine in separate pieces of inhalation apparatus ready for use, or the inhalation apparatus and the measured doses of medicine may be supplied separately, so that the consumer may apply the medicine to the inner surface of the medicine chamber when desirable. The medicine may for instance be dissolved in alcohol, and the solution then spread over the interior surface of the medicine chamber. After the evaporation of the alcohol the medicine is ready for use.

The modification illustrated in Fig. 4 is especially adapted to be carried in a pocket and comprises a cigar-shaped pipe 19 which is closed at its ends by corks 20. When the patient desires to inhale, both the corks 20 are removed and the patient grips the pipe with a hand, at the same time inhaling air and medicine through the nostrils and the pipe.

Since only a limited quantity of medicine will adhere to the interior surface of the medicine chamber, such quantity can comprise a single dosage and hence, the inhalation apparatus of the present invention provides a means whereby quick and easy vaporisation of a specific quantity of medicine can be obtained.

Various forms of hand inhalation apparatus for volatilizing medicines by the heat of the hand have been previously proposed but in all of them the medicine has been supported by an inserted plug or the like within the inhaler or the medicine has been poured or packed into the inhaler and consequently the dosage could not be regulated.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. An inhalation apparatus for volatile medicine, comprising in combination a thin-walled vessel of heat-conducting material constituting a medicine chamber adapted to be held in the hand and provided with an inlet and an inhalent outlet for the respiration of air, and a medicine applied in the form of a thin layer to the inner surface of the medicine chamber so as to be capable of being volatilized in full by the heat emitted by the hand holding the apparatus.

2. A hand inhalation apparatus, substantially as hereinbefore described or substantially illustrated in and described with reference to any one of Figures 1 to 5 of the accompanying drawings.

3. A method of making a hand-warmed inhalation apparatus, comprising introducing into a chamber of the form referred to in claim 1 or illustrated in any of Figures 1 to 5 of the drawings, a solution in a volatile solvent of a dose of the medicine to be inhaled, and allowing the solvent to evaporate whilst leaving the medicine as a coating on the wall of the chamber.

Dated this 28th day of January, 1938.

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Fig. 1.

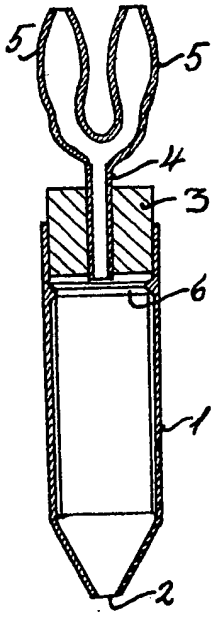


Fig. 2.

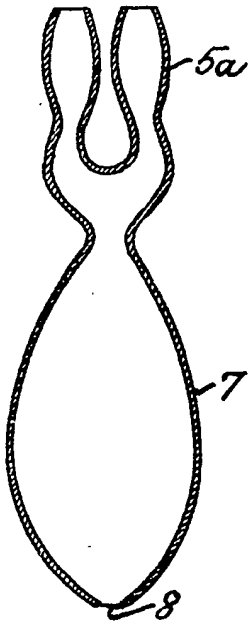


Fig. 3

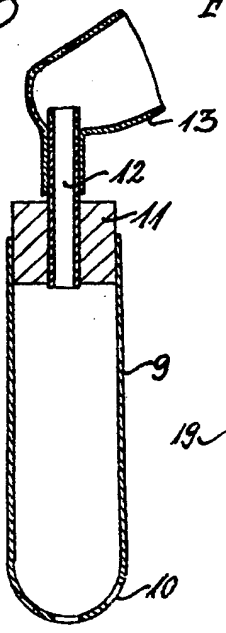
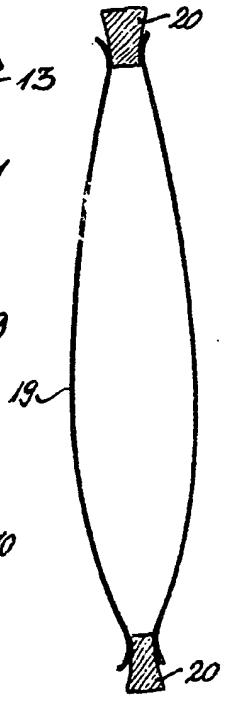


Fig. 4.



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